

REMARKS

The Invention

The present invention relates to a method for preparing an insulating resin composition, multilayer wiring board, and a process for producing the same. The claims under examination relate to an insulating resin composition comprising:

- (A) a novolak epoxy resin having a biphenyl structure;
- (B) carboxylic acid-modified acrylonitrile butadiene rubber particles;
- (C) a triazine ring-containing cresol novolak phenolic resin;
- (D) a phenolic hydroxyl group-containing phosphorus compound; and
- (E) inorganic filler.

By employing the above components, the present invention obtains the desired characteristics of having excellent flame retardance without having halogens. A film from this composition also has excellent bond strength to plated copper film with lower surface roughness; a large elongation giving resistance to mechanical and thermal stress concentration; a coefficient of expansion equivalent to that of a conventional structure of glass cloth (thereby helping connection reliability); and excellent high frequency properties (see Specification pp. 2-4).

The Rejections

All of the claims under examination (claims 1-5) stand rejected under 35 U.S.C. § 103(a) over Tobisawa et al (U.S. Patent No. 6,486,242) [hereinafter "Tobisawa"] in view of Japanese Patent No. 2000-256537 [hereinafter "Japanese '537"] and Inagaki et al (U.S. Patent No. 5,837,155) [hereinafter Inagaki], in further view of Japanese Patent No. 2001-247657 [hereinafter "Japanese '657"] and in still further view of Japanese Patent No. 2002-

348353 [hereinafter “Japanese ‘353”].

Applicant’s Arguments

Tobisawa teaches a flame-retardant resin composition with novolak epoxy resin, novolak resin, and a phosphorus compound reactable with one of the resins (Abstract). As admitted by the Examiner (Office Action dated January 7, 2005, page 4, lines 1-2), Tobisawa fails to teach carboxylic acid-modified acrylonitrile butadiene rubber particles as recited in claim 1. Also as admitted by the Examiner, Tobisawa fails to teach cresol novolak resin as recited in claim 1 (Office Action dated January 7, 2005, page 5, lines 1-2). As further admitted by the Examiner, Tobisawa fails to teach phenolic hydroxyl groups as claimed (Office Action dated January 7, 2005, page 5, lines 11-12).

Japanese ‘537 teaches an epoxy resin composition with phenolic-hydroxyl group-containing phosphorus compound and crosslinked carboxyl group-containing butadiene-acrylonitrile rubber particles, but fails to teach any of a novolak epoxy resin having a biphenyl structure; a triazine ring-containing cresol novolak phenolic resin; or inorganic filler as recited in claim 1.

Inagaki teaches an insulated resin composition for multi-layer circuits derived from an epoxy resin and including fine rubber particles. Inagaki fails to teach a triazine ring-containing novolak phenolic resin as recited in claim 1.

Japanese ‘657 teaches bisphenol-A epoxy resin, cresol-novolak epoxy resin, and a compound having phenol and triazine backbones, but fails to describe carboxylic acid-modified acrylonitrile butadiene rubber particles or inorganic filler.

Japanese ‘353 teaches an epoxy resin composition including a cresol novolak curing agent and an inorganic filler, but fails to teach a ring-containing cresol novolak

phenolic resin or a phenolic hydroxyl group-containing phosphorous compound.

The Examiner fails to show the requisite motivation to combine this minimum of four references to create the claimed invention. See In re Kotzab, 217 F.3d 1365, 1370 (Fed. Cir. 2000). “The result is that the claims were used as a frame, and individual, naked parts of separate prior art references were employed a mosaic to recreate a facsimile of the claimed invention.” W.L. Gore & Assocs. v. Garlock, 220 U.S.Q.P. 303, 312 (Fed. Cir. 1983). Especially, the Examiner has shown no motivation to select a cresol novolak resin from Japanese ‘657 to combine with Tobisawa. Thus, because the Examiner has not established a *prima facie* case of obviousness, Applicants respectfully traverse the rejection of the claims.

Superior and Unexpected Results

Moreover, Applicants have shown superior and unexpected results over the prior art compositions. The attached Declaration Under 37 CFR 1.132 compares an example resin composition according to the present invention with Comparative Example A which lacks acrylonitrile butadiene rubber particles, thus is analogous to the closest prior art, namely Tobisawa. In fact, Comparative Example A is closer to the invention than even the closest prior art, because, unlike Tobisawa, Comparative Example A contains cresol novolak resin and phenolic hydroxyl groups.

As seen in Table 2 of the Declaration, the film formed from the composition of the present invention has much better elongation, reduced surface roughness after roughening, and much higher bond strength than Comparative Example A. In view of these results, Applicants further traverse the rejection of the claims under § 103.

Dependent Claims

Regarding dependent claims 2-5, the Examiner has not pointed out where the references teach the limitations recited in these claims. When the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference. In re Rijckaert, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). Applicants respectfully insist that these claims be fully examined for patentability.

Conclusion

For all of the above reasons, claims 1-5 are in condition for allowance. Therefore, Applicants respectfully request reconsideration of the application and withdrawal of the rejections, and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney for the Applicants.

Respectfully submitted,
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